

WHAT IS CLAIMED IS:

1. A method for testing a hypothesis with a symbol aligned correlation comprising:
 - receiving a hypothesis;
 - determining a start and a stop condition;
 - selecting samples from a received sequence based on the start condition; and
- 5 providing the samples and hypothesis to a correlator.
2. The method of claim 1, wherein the start condition may be expressed as when a time index modulo N is equal to zero, where N is a length of a symbol.
3. The method of claim 2, wherein when N is a power of 2, then if the time index is expressed as $t_m t_{m-1} t_{m-2} \dots t_1 t_0$, then $t_{n-1}, t_{n-2}, \dots, t_0$ are equal to zero, where $n = \log_2 N$.
- 10 4. The method of claim 1, wherein the ending condition may be expressed as when a time index is equal to $(N - \text{partial correlation length})$ modulo N, where N is a length of a symbol and correlation length is a number of chips being correlated together.
5. The method of claim 4, wherein when N is a power of 2, then if the time index is expressed as $t_m t_{m-1} t_{m-2} \dots t_1 t_0$, then $t_{n-1}, t_{n-2}, \dots, t_0$ are equal to one, where $n = \log_2 N$.
- 15 6. The method of claim 1, wherein the samples are selected from a group of sampled chips from a received sequence.
7. The method of claim 6, wherein the group of buffered chip samples is of size $2 * \text{correlation length} - 1$, where correlation length is a number of chips being correlated together.

8. The method of claim 1, wherein the samples are selected based on the start and stop conditions.
9. The method of claim 1 further comprising after the selecting, waiting for the starting condition to be met.
- 5 10. The method of claim 1, wherein the hypothesis is a plurality of hypotheses, and wherein the determining, selecting, and providing is performed for each hypothesis in the plurality of hypotheses.
11. The method of claim 1 further comprising after the providing:
 - generating a pseudo-random sequence based on the hypothesis;
 - 10 correlating the pseudo-random sequence with the samples;
 - accumulating the correlation results; and
 - processing the accumulation result.
12. The method of claim 11, wherein the accumulating comprises both coherent and non-coherent accumulation.
- 15 13. The method of claim 11, wherein the processing comprises comparing the accumulation result with a predetermined threshold.
14. The method of claim 13, wherein the hypothesis is declared a good match if the accumulation result exceeds the predetermined threshold.

15. A circuit comprising:

a search control unit coupled to a hypothesis memory, the search control unit containing circuitry to provide a start and stop condition for a correlation based on a hypothesis read from the hypothesis memory;

5 a searcher coupled to the search control unit, the searcher containing circuitry to select a subset of samples from a received sequence based on instructions from the search control unit, correlate the subset of samples with a pseudo-random number sequence, and accumulate the correlation results; and

10 a sequence generator coupled to the search control unit and the searcher, the sequence generator containing circuitry to generate the pseudo-random number sequence based on the hypothesis.

16. The circuit of claim 15, wherein the searcher comprises:

15 a multiplexer coupled to a received sequence input, the multiplexer containing circuitry to select the subset of samples from the received sequence based on the start and stop condition provided by the search control unit;

a descrambler coupled to the multiplexer and the sequence generator, the descrambler containing circuitry to correlate the subset of samples from the multiplexer with the pseudo-random number sequence from the sequence generator; and

20 an accumulator coupled to the descrambler, the accumulator containing circuitry to coherently and non-coherently accumulate the correlation results.

17. The circuit of claim 16, wherein the searcher further comprises a result processor coupled to the accumulator, the result processor containing circuitry to determine if the pseudo-random number sequence was a good match for the subset of samples.

18. The circuit of claim 16, wherein the searcher further comprises a sample buffer coupled to the multiplexer, the sample buffer to store samples of the received sequence.
19. The circuit of claim 18, wherein the sample buffer is capable of storing $2 * \text{correlation length} - 1$ samples of the received sequence, where correlation length is the number of samples being correlated together.
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20. The circuit of claim 15, wherein the hypothesis stored in the hypothesis memory is stored as a set of search parameters, and wherein the hypothesis is derived from the set of search parameters and a timing reference.

21. A wireless device comprising:
- an analog front end coupled to an antenna, the analog front end containing circuitry to filter and amplify a received signal provided by the antenna;
- an analog-to-digital converter (ADC), the ADC to convert an analog signal provided by
- the analog front end into a digital symbol stream;
- a search unit coupled to the ADC, the search unit containing circuitry to test hypotheses, wherein the tests are performed along symbol boundaries; and
- a processing unit coupled to the ADC, the processing containing circuitry to error detect and correct, decode and despread, and filter the digital symbol stream.
- 10 22. The wireless device of claim 21, wherein the search unit comprises:
- a search control unit coupled to a hypothesis memory, the search control unit containing circuitry to provide a start and stop condition for a correlation based on a hypothesis read from the hypothesis memory;
- a searcher coupled to the search control unit, the searcher containing circuitry to select a subset of samples from a received sequence based on instructions from the search control unit,
- correlate the subset of samples with a pseudo-random number sequence, and accumulate the correlation results; and
- a sequence generator coupled to the search control unit and the searcher, the sequence generator containing circuitry to generate the pseudo-random number sequence based on the hypothesis.

23. The wireless device of claim 22, wherein the searcher comprises:
- a multiplexer coupled to a received sequence input, the multiplexer containing circuitry to select the subset of samples from the received sequence based on the start and stop condition

- provided by the search control unit;
- a descrambler coupled to the multiplexer and the sequence generator, the descrambler containing circuitry to correlate the subset of samples from the multiplexer with the pseudo-random number sequence from the sequence generator; and
- 5 an accumulator coupled to the descrambler, the accumulator containing circuitry to coherently and non-coherently accumulate the correlation results.
24. The wireless device of claim 21, wherein the wireless device operates in a digital wireless communications network.
25. The wireless device of claim 24, wherein the digital wireless communications network is
10 a UMTS compliant communications network.
26. The wireless device of claim 24, wherein the digital wireless communications network is
a CDMA2000 compliant communications network.